

Fig. 1

Fig. 2a
Fig. 2b
Fig. 2c

ICTB : 1
SLR : 13

ATGACTGCTCGGCAAACTCTGACTTTTGGCCATTACCAACCCCAACAGTGGGGCCACAGC
ATCTCTATCTGGCGATCGCTGATGTTGGCGGTTTCCCCCCAGGAATGGGGCCGGGGC

60 (SEQ ID NO:2)
72 (SEQ ID NO:4)

ICTB : 61
SLR : 73

AGTTTCTTGCATCGGCTGTTTGGCAGCCTGC-GAGCTTGGGGGGCCTCCAGCCACGCTGTT
AGTGTGCTCCATCGTTTGTGGGCTGGGACAGAG-TTGGATACAGGCTAGTGTGCTCTG

119
131

ICTB : 120
SLR : 132

GGTTTGGTCTGAGGCACCTGGGT--GGCTTCTTGTGTGCTGTCGTCTACGGTTCGGCTCCG
GCCCACTTCGAGGCATTGGGTACGGCT-CTAG-TGGCAATAATTTTATTGCGGCTCCC

177
189

ICTB : 178
SLR : 190

TTTGTGCCCCAGTTCGCCCTAGGGTTGGGGCTAGCGCGGATCCGG-GCCTATTGGGCCCT
TTCACCTCCACCACCATGTGGGCATTTTAT-GCTGCTCTGTGGAGCCTTTTGGGCTCT

236
248

ICTB : 237
SLR : 249

GCTCTCGCTGACAGATATCGATCTGCGGAAGCA---ACCCCATTCACGTGGCTGGTCT
GCTGACCTTTGCTGAT--CAACCAG-GGAAGGGTTGACTCCCATCCATGTTTTAGTTTT

293
305

ICTB : 294
SLR : 306

GCTCTACTGGGGCGTCGATGCCCTAGCAACGGGACTCTCACCCGTACGGGTGCAGCTTT
TGCCTACTGGTGCAATTCGGCGATCGCGTGGGATTTCTCCGGTAATAATGGCGGCGGC

353
365

Fig. 2a



ICTB : 943 AACTTCCGGATCAATGTCTGGCTGGCGGTGCTGCAGATGATTCAAGATCGGCCTTGGCTG 1002  
 || ||||| ||||| || | || | |||| | || || || |  
 SLR : 955 AATTTCCGCATCAATGTTTGGGAAGGGGTAAAAGCCATGATCCGAGCCCGCCCTATCATT 1014

ICTB : 1003 GGCATCGGCCCCGGCAATACCGCCTTTAACCTGGTTTATCCCTCTATCAACAGGCGCGC 1062  
 ||||| ||||| || || ||||| ||||| ||||| |||| | || ||||  
 SLR : 1015 GGCATTGGCCCAGGTAACGAAGCCTTTAACCAAATTTATCCTTACTATATGCGGCCCCGC 1074

ICTB : 1063 TTTACGGCGTTGAGCGCCTACTCCGTCCCGCTGGAAGTCGCGGTTGAGGGCGGACTACTG 1122  
 || || || ||||| ||||| || | || || | || || || || ||  
 SLR : 1075 TTCACCGCCCTGAGTGCCATTCCATTTACCTAGAAATTTGGTGGAACGGGTGTAGTT 1134

ICTB : 1123 GGCTTGA-CGGCCTTCGCTTGGCTGCT-GCTGGTCACGGCGGTGACGGCGGTGCGGCAGG 1180  
 || || | || | || ||||| || || | || || || || || || ||  
 SLR : 1135 GGTTTTACCTGTATGCTC-TGGCTGTTGGCCGTTACCCTAGGCAAAGGC-GTAGAACTGG 1192

ICTB : 1181 TGAGCCGACTGCGGCGGATCGCAATCCCC--AAGCCTTTTGGTTGATGGCTAGCTTGGC 1238  
 | | || || || || || || || || || || || || || || || ||  
 SLR : 1193 TTAAACG-CTGTCGC-CAAACCTCGCCCCGGAAGGCATCTGGATTATGGGGGCTTTAGC 1250

ICTB : 1239 CGGTTTGGCAGGAATGCTGGGTACGGTCTGTTTGATACCGTGCTCTATCGACCGGAAGC 1298  
 | | | || || || || || || || || || || || || || || ||  
 SLR : 1251 GGCGATCATCGGTTTGTGGTCCACGGCATGGTAGATACAGTCTGGTACCGTCCCCCGGT 1310

ICTB : 1299 CAGTACGCTCTGGTGGCTCTGTATTGG--AGCGATCGCGAGTTTCTGG--CAGC-CCCAA 1353  
 || || | ||||| | || || | | || || || || || || || ||  
 SLR : 1311 GAGCACTTTGTGGTGG-TTGCTAGTGGCCATTG-TTGCTAGTCAGTGGGCCAGCGCCAG 1368

ICTB : 1354 CCTTCCAAGCAACTCCCTCCAGAAGCCGAGCATTTCAGACGAA 1395  
 | | | | | |||| || || || || ||  
 SLR : 1369 GCCCGTTTGGAGGCCAGTAAAGAA---GAAAATGAGGACAAA 1407

Fig. 2c

ICTB : 1 MTVWQTLTFAHYQPQQWGHSSFLHRLFGSLRAWRASSQLLVWSEALGGFLLAVVYGSAPF 60  
 +++W++L F + PQ+WG S LHRL G ++W +S L EALG L+A+++ +APF  
 SLR : 5 ISIWRSMLMFGGFSPQEWGRGSVLHRLVGVGQSWIQASVLWPHFEALGTALVAIIFIAAPF 64

ICTB : 61 VPSSALGLGLAAIAAYWALLSLTDIDLQATPIHVLVLLYWGVDALATGLSPVRAAALVG 120  
 ++ LG+ + A+WALL+ D + TPIH LV YW + A+A G SPV+ AA G  
 SLR : 65 TSTTMLGIFMLLCGAFWALLTFADQPGKGLTPIHVLVFAYWCISAIAVGFSPPVKMAAASG 124

ICTB : 121 LAKLTLYLLVFALAARVLNPNRLRSLLFSVVVITSLEFVSUYGLNQWIYVEELATWVDRN 180  
 LAKLT L +F LAAR+L+N + + L +VV++ L V YGL Q + GVE+LATW D  
 SLR : 125 LAKLTANLCLFLLAARLLQNKQWLNRLVTVLLVGLLVGSYGLRQQVDGVEQLATWNDPT 184

ICTB : 181 SVADFTSRVYSYLGPNPALLAAYLVPTTAFSAAAIGVWRGWLPKLLAIAATGASSLCLILT 240  
 S +RVYS+LGPNPALLAAYLVP T S +A+ VWR W PKLL + LCL T  
 SLR : 185 STLAQATRVYSFLGNPNLLAAYLVPMGTGLSLSALVVWRRWWPKLLGATMVIVNLLCLFFT 244

ICTB : 241 YSRGGWLGFVAMIFVWALLGLYWFQPRLPAPWRRWLFPPVVLGGLVAVLLVAVLGLEPLRV 300  
 SRGGWL +A+ + L +W+ P+LP W+RW P+ + V + A++ +EP+R+  
 SLR : 245 QSRGGWLAVLALGATFLALCYFWWLPQLPKFWQRWSLPLAIAVAVILGGGALIAVEPIRL 304

ICTB : 301 RVLSIFVGREDDSSNNFRINVLAVLQMIQDRPWLIGIGPGNTAFNLVYPLYQQARFTALSA 360  
 R +SIF GREDDSSNNFRINVW V MI+ RP +GIGPGN AFN +YP Y + RFTALSA  
 SLR : 305 RAMSIFAGREDDSSNNFRINWEGVKAMIRARPIIGIGPGNEAFNQIYPYMRPRFTALSA 364

ICTB : 361 YSVPLEVAVEGGLLGLTAFAWLLLVTAVTAVRQVSRLRRDRNPQAFWLMAFLAGLAGMLG 420  
 YS+ LE+ VE G++G T WLL VT V V R R+ P+ W+M +LA + G+L  
 SLR : 365 YSIYLEILVETGVVGFTCMLWLLAVTLGKGVELVKRCRQTLAPEGIWIMGALAAIIGLLV 424

ICTB : 421 HGLFDTVLYRPEASTLWWLCIGAIASFQWQPSKQLPPEAEHSDEKM 467  
 HG+ DTV YRP STLWWL + +AS W ++ + E+ D+ +  
 SLR : 425 HGMVDTVWYRPPVSTLWWLLVAIVASQWASAQARLEASKEENEDKPL 471

Fig. 3

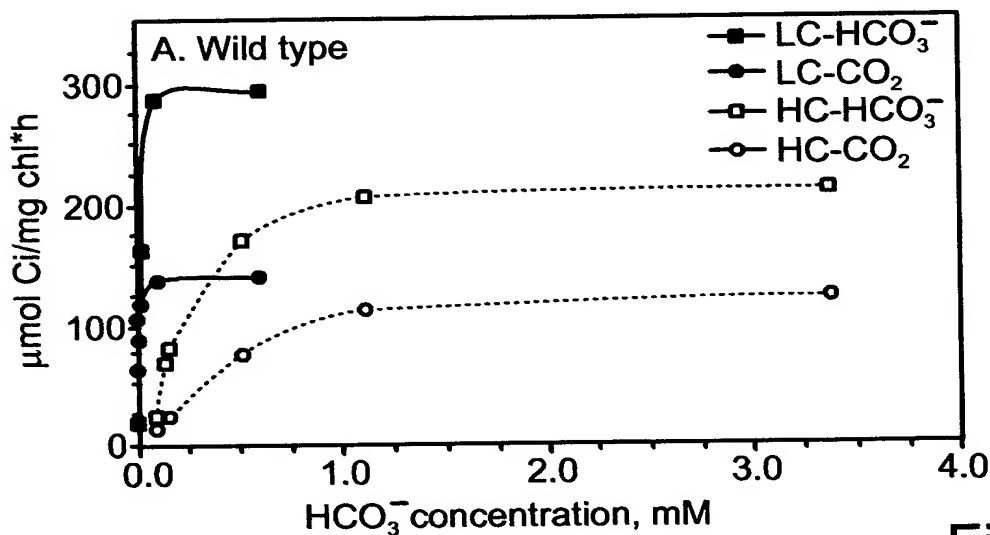


Fig. 4a

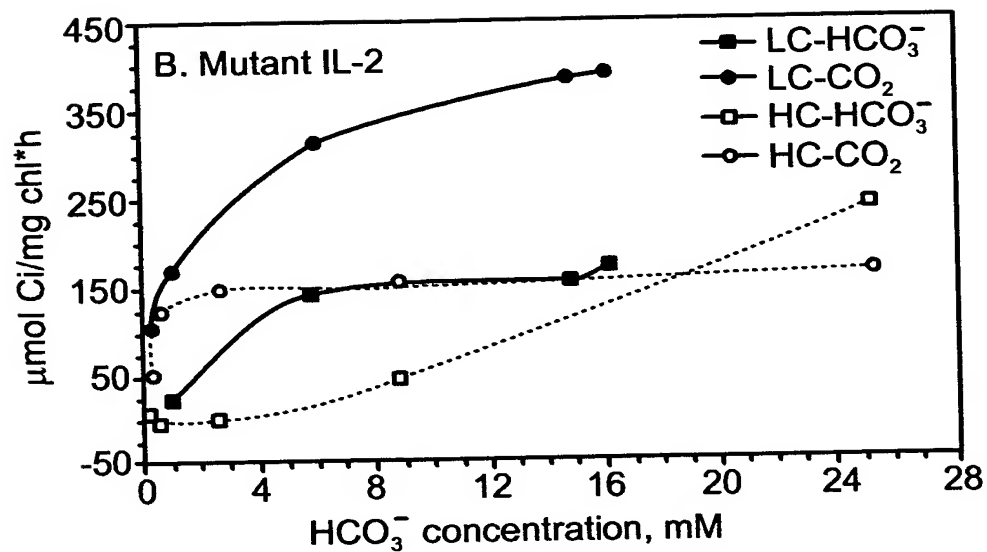


Fig. 4b

Wild type	GGGCT-AGCCGCGATCGCGGCCTATTGGGCCC
IL-2 <i>Apa</i> I side	GGGCT-AG--G-GATCGC-GCCTATTGGGCCC
IL-2 <i>Bam</i> HI side	GGGCTCA-----GATCGC-GCCTATTGGGCCC
IctB	G L A A I A A Y W A L

Fig. 5

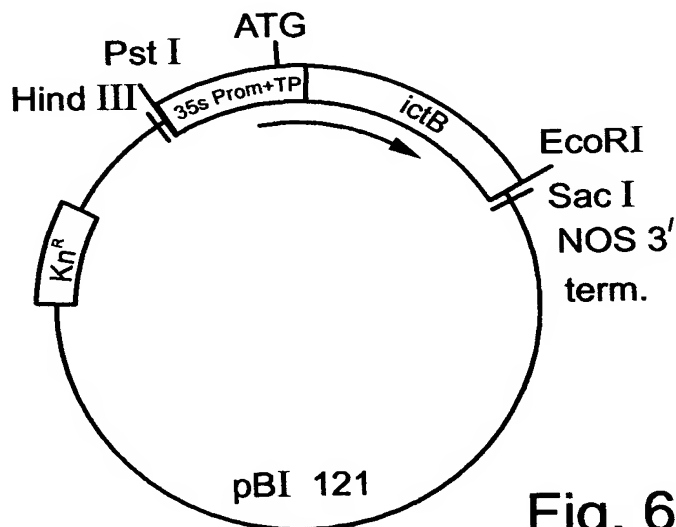


Fig. 6

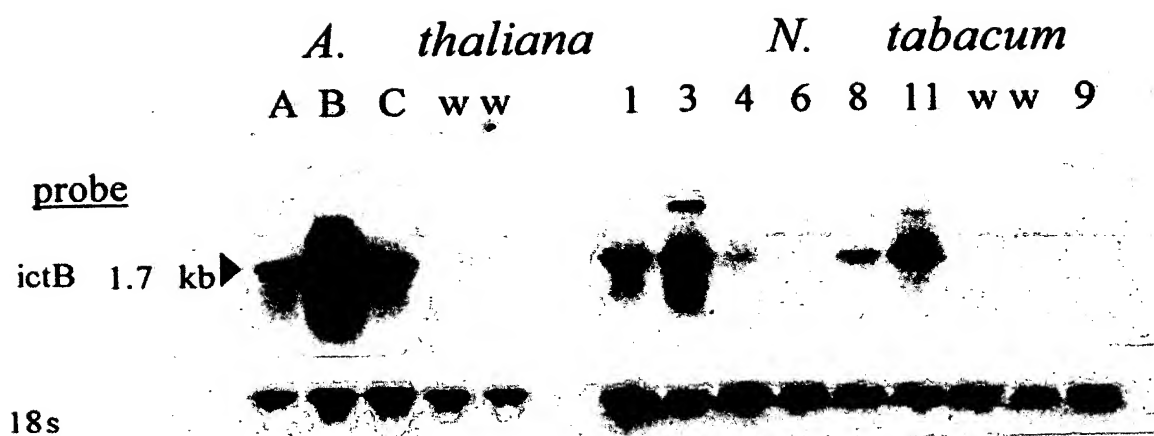


Fig. 7

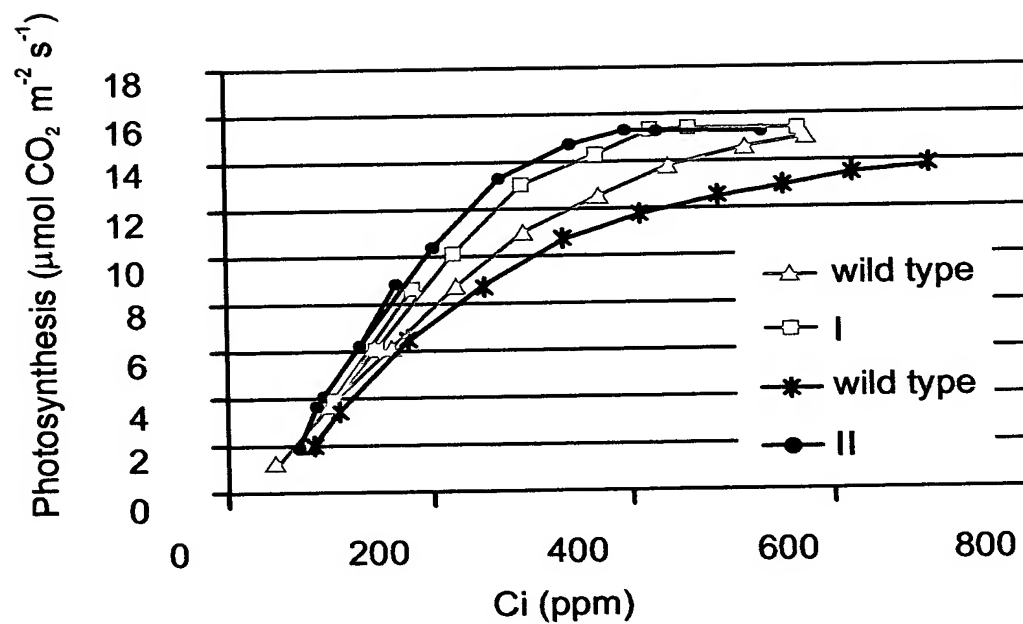


Fig. 8

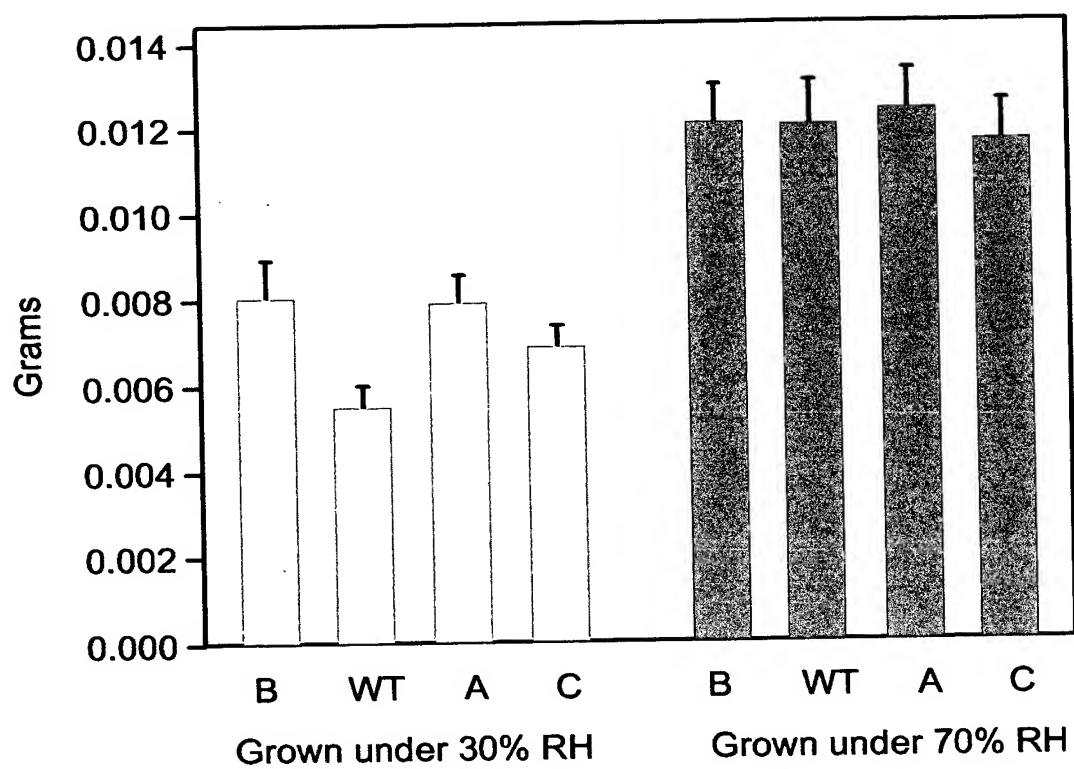


Fig. 9

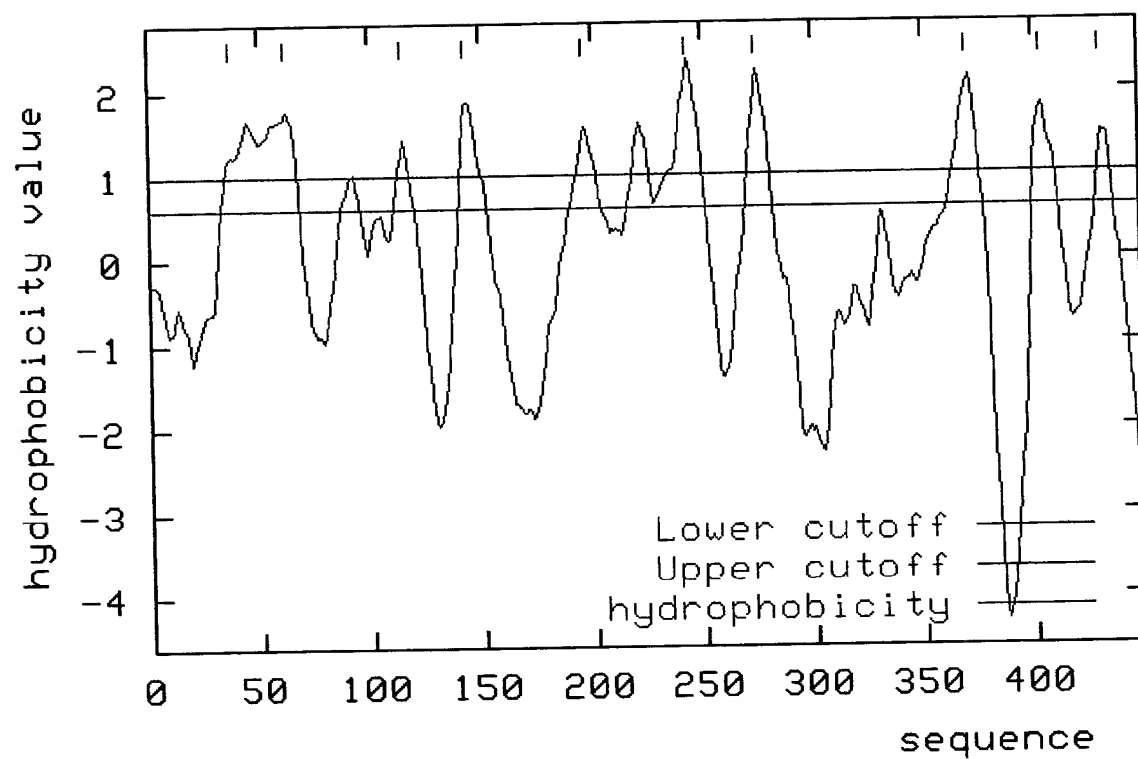


Fig. 10a

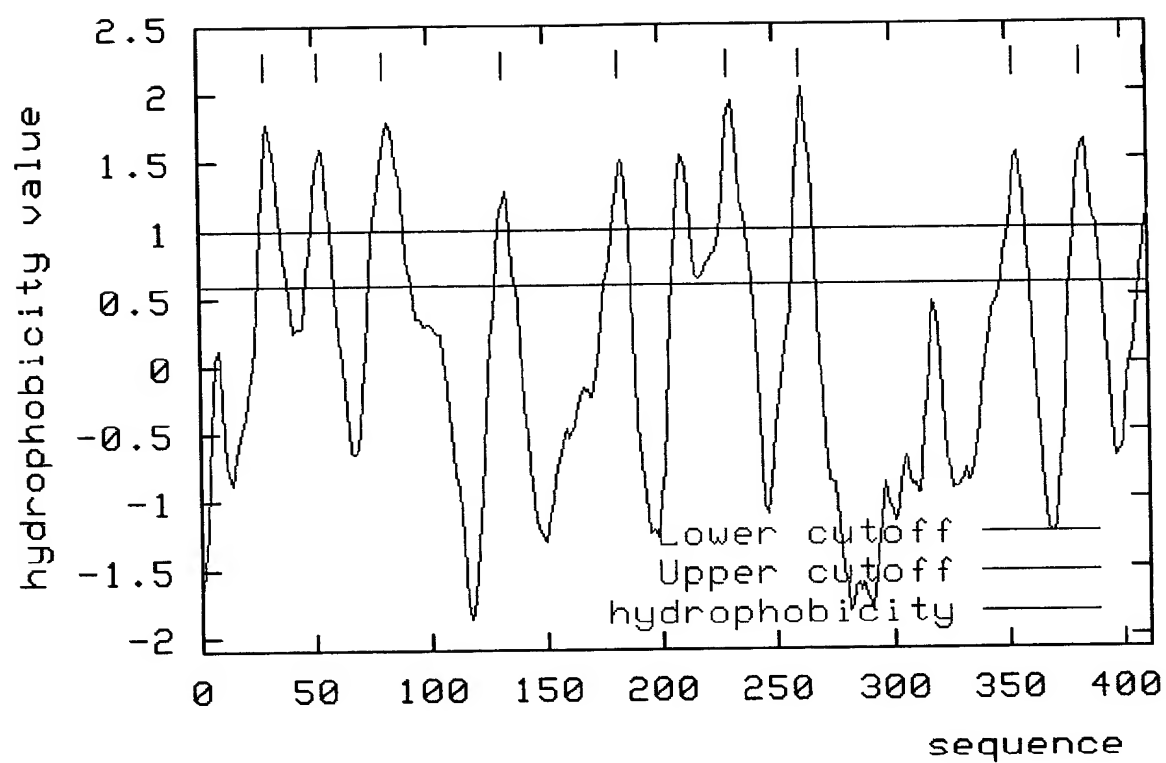


Fig. 10b

legend: \* =Identity; : =strong similarity; . =similarity

	10	20	30	40	50	60
Anabaena	---MNLVWQRF	TLSSLPK--	QFLATSYLHR	FLVGLLSSWR	QTSFLLQWGD	MIAAALLSL
Nostoc	MFFMNLVWQ	LFTLSSLPK--	EYLATSYVHR	SLVGLLSSWR	QTSVLIQWGD	AIAAVLLSS
Trichodesmium	---MNSVWKK	LTLTNLSFSD	SEWLNASYLY	GLLNGSLYN	WRRGSWLMQ	WGEPLGFVLLAI
SLR1515	MVSPISIWRS	LMFGGFSPQ--	EWGRGSVLHR	-LVGWGQSWI	QASVLWPHF	EALGTALVAI
IctB	----MTVWQ	TLTFAHYQPQ--	QWGHSSFLHR	-LFGSLRAW	RASSQLLVW	SEALGGFLLAV
Thermosyn	-----MDV	LLRRLDVEG--	WRSHSGVGR	-LLGLLQG	WQEKSWLGR	WLP SLAVLLVGL
Prochloroco	-----MPK	TAA PQ-----	PLLLRWQGH	IPSSSEAMQ	MRLQWIAG	LLLLMM
Synechococcus	-----MAD	ATDQRS-----	IPLLLRWQ	GCLTPTASV	QQRLELLS	GVV LML
			*	:	:	:
	70	80	90	100	110	120
Anabaena	IYVLA	PFVSS	TLVGV	LLIACV	GFWLL	LTLSDE
Nostoc	IYALAP	FASST	LVGLL	VACV	GFWLL	LTLSDE
Trichodesmium	VFTLA	PFVNT	TIGF	LLAS	AGFW	VLLK
SLR1515	I FIA	APFT	STTML	GI FM	LLCG	AFWAL
IctB	VYGS	APFVP	SSAL	GGLG	LAAIA	AYWAL
Thermosyn	VLVL	APLMP	SGMIG	MLLA	AGSG	FWLLW
Prochloroco	LLAT	L PML	TRTGL	GLTIL	AAGAL	WIIW
Synechococcus	LLGSL	PFVSR	SGLGLE	LAAAG	LLWLL	WLSL
	:	*	:	:	:	:
	130	140	150	160	170	180
Anabaena	LSPVK	KAAL	TDLL	TLTY	LLLF	FALCAR
Nostoc	LSPVK	KAAL	NDLGT	LTLY	LLLF	FALCAR
Trichodesmium	ISPAK	TAA	FSGW	KLTLY	LLLF	FASGSL
SLR1515	FSPVK	MAA	ASGL	AKLT	TANL	CLFL
IctB	LSPV	RAAAL	VGLAK	LTLY	LLVF	FALAAR
Thermosyn	LSPV	PRAAM	VGLG	KLTLY	LLFF	FALAER
Prochloroco	FSPV	PLAA	AKGLI	KLISY	LG	VYALMR
Synechococcus	FSPV	PIAA	AKGLL	KLTSY	LG	VYALMR
	:	*	*	:	:	:
	190	200	210	220	230	240
Anabaena	GAPPL	ATWVD	PESTL	SKTTR	VYSY	LG
Nostoc	GATAL	ATWVD	PESPL	SKTTR	VYSY	LG
Trichodesmium	KVEPL	ATWND	PTS	SAQAG	ATRV	YSY
SLR1515	GVEQL	ATWND	PTST	LAQAT	RVYS	FLG
IctB	GVEEL	ATWVD	RNSV	ADFT	SRVYS	FLG
Thermosyn	GAEPL	ATWTD	PESAL	ANVTR	VYSY	FLG
Prochloroco	PAEEM	AHWA	D P	NSVA	AGTV	RIY
Synechococcus	STDEL	AGWA	D P	NSV	SAGT	IRI
	:	*	*	*	*	*

Fig. 11a

Fig. 11b

Fig. 11

Fig. 11a

	250	260	270	280	290	300
Anabaena	MLFVNTACLI	FTYSRGGWIGLVVAVL	GATALLVDWWSVQMP	PFWRTWSL	PILLGGLIGVL	
Nostoc	MLIVNTACLI	LTFSRGGWIGLVVAVL	AVMALLVFWKSVEMPP	PFWRTWSL	PIVLGGLIGIL	
Trichodesmium	ILLVSCACLR	YTGSRGSWIGFLALMFAM	LILMWYWRSYMP	SFWQIWSL	PIAVGSFAGLL	
SLR1515	MVIVNLLCL	FFTQSRGGWLAVLALGAT	FLALCYFWWLPQ	LPKFWQRWSL	PLAIAVAVILG	
IctB	ATGASSLC	LIITYSRGGWLG	FVAMIFVWALLGLY	WFQPRLPAPWRR	WLFPPVVLGGLVAVL	
Thermosyn	MLGMNAAS	LIITFSRGGWLG	LVAATIAGVVL	LGIFWPRLP	PLQWRRWGVP	TMGGGLAIALC
Prochloroco	ALGLGITAT	LFSFSRGGWLG	MLSALAVILV	LLLLRSTSHW	PLVWRRLLPL	IVIVLGTAML
Synechococcus	TALLAGSAT	VFTYSRGGWLG	LALLALAGML	LILLRTTAHW	PPLWRRLLPL	AALLIAGIAL
	.	:	***.*:..:	*	*	*
	310	320	330	340	350	360
Anabaena	LIAVLFVEP	VRFRVLSIFADRQD	SSNNFRNVWD	AVFEMIRDRP	IIIGIGPGHNS	FNKVYP
Nostoc	LLAVIFVEP	VRFRVLSIFADRQD	SSNNFRNVWD	AVFEMIRDRP	IFGIGPGHNS	FNKVYP
Trichodesmium	ILAVVLEPL	RDRVLSVFAGRQD	SSNNFRNVWMS	VFDMIRDRP	ILGIGPGND	VFNKIYP
SLR1515	GGALIAVEP	IRLRAMSIFAGRED	SSNNFRINVW	EGVKAMIRAR	PIIGIGPGNE	AFNQIYP
IctB	LVAVLGLEP	LRVRVLSIFVGRE	SSNNFRINVW	LAVLQMIQDRP	PWLIGIGPGN	TAFNLVYP
Thermosyn	MGTIVSVPL	RERAAASIFVARG	SSNNFRINVW	MAVQMIWARP	PWLIGIGPGN	VAFNQIYP
Prochloroco	VIAATQIEP	IRTRITSLIAGRS	SSNNFRINVW	LSLEMIQARP	PWLIGIGPGN	AAFNRIYP
Synechococcus	ALAITQLDP	IRTRVLSLVAGR	SSNNFRINVW	LAAIEMVQDRP	PWLIGIGPGN	AAFNNSIYP
	:	:	*:* * * :.. * ***** *	:	** :*****:	** :*
	370	380	390	400	410	420
Anabaena	LYQR-PRYS	SALSAYSIFLEV	AVEMGFVGLAC	FLWLIIVTINT	AFVQLRQLRQ	SANVQGF
Nostoc	LYQH-PRYT	SALSAYSILFEV	TVETGFVGLAC	FLWLIIVTFNT	ALLQVRRRLR	RLRSVEGF
Trichodesmium	LYQR-PRYS	ALSSYSVPLEI	VVETGFIGLTA	FLWLLLVTFN	QGVQLKRLRD	ADNPQGYW
SLR1515	YYMR-PRFT	SALSAYSIIYLE	ILVETGVVGFT	CMLWLLAVTL	GKGVELVKRC	RQTLAPEGIW
IctB	LYQQ-ARFT	SALSAYSVPLE	VAVEGGLLGLT	AFWLLLVTA	VTAVRQVSR	LRDRNPQAFW
Thermosyn	LYQVNVRF	TALGAYSIFLEI	LVEVGFIFG	GVFLWLLAVL	GDRARRCFEEL	RATGSPQGF
Prochloroco	LFQQ-PKF	NALSAYSVPLEI	LVEVGFIFG	GVFLWLLAVL	GDRARRCFEEL	RATGSPQGF
Synechococcus	LYQQ-PKF	DALSAYSVPLEI	LVEVGFIFG	GVFLWLLAVL	GDRARRCFEEL	RATGSPQGF
	:	:	**:* * * :.. * ***** *	:	** :*****:	** :*
	430	440	450	460	470	480
Anabaena	LVGALATLL	GMIAHGTVD	TIWFRPEVNTL	WWLMVALIASY	WTPLSANQCQ	EELNLFKEEPT
Nostoc	LIGAIAILL	GMIAHGTVD	TVWYRPEVNTL	WWLIVALIASY	WTPLTQNTNP	SS---NPEPA
Trichodesmium	LIGAIAAMV	GLIGHGLVDT	VWYRPQVNTI	WWLMVAIIAS	YSSQQGVRS	RE-----
SLR1515	IMGALAAI	IGLLVHGMV	DTVWYRPVSTL	WWLLVAIVAS	QWASQAARLE	ASKEENEDKPL
IctB	LMASLAGL	AGMLGHGLF	DTVLYRPEAST	LWWLCIGAIAS	FWQPQPSKQL	PPAEHSDEKM
Thermosyn	LMGTIAAM	IGMLTHGLV	DTIWFPRPEV	ATLWWLMVAI	VASFTPFQSK	TANGTFSNRD
Prochloroco	ALASLAAI	AGLAVHGIT	DTIWFPRPEV	QLVGWFC	LATLAQTQPE	QKQLQOTE-----
Synechococcus	AIGSLAAI	AGLLTQGIT	DTIWFPRPEV	QLIGWFALAS	LGATWL	LRD-----
	:	:	*:* * * :.. * ***** *	:	** :*****:	** :*
Anabaena	SN-					
Nostoc	VN-					
Trichodesmium	---					
SLR1515	LAS					
IctB	---					
Thermosyn	---					
Prochloroco	---					
Synechococcus	---					

Fig. 11b

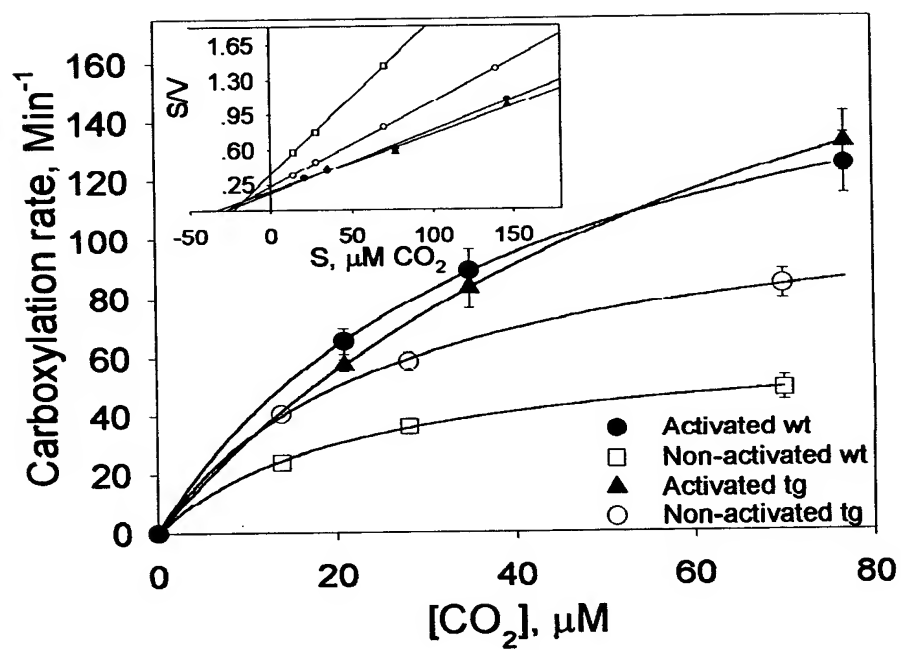


Fig. 12